Time Phasing

Module 12

ESC Cost Core Training
Developed By

USAF ESC/FMC
Hanscom AFB, MA
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The 7 Steps of Cost Estimating

① Define and Plan

② Specify Estimating Methodology

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⑤ Inflate to Then Year Dollars

⑥ Wrap Up Documentation

⑦ Complete Final Reviews

Calculate the Cost Estimate

- Calculate and sum the specified estimating methodologies for each WBS element to derive the bottom line results.

- Calculations in Base Year dollars are performed for all primary and secondary methodologies, and for all alternatives.

Example 1

Test $ = LRATE * TMO * TMEN

where:

LRATE is the monthly loaded labor rate for test engineers

TMO is the number of test months

TMEN is the number of test engineers required

Example 2

SE/PM = PMP * SE/PM(F)

where:

PMP is the calculated value of the Prime Mission Product

SE/PM(F) is the SE/PM expressed as a factor of PMP

Example 3

Software Development $ for CSC(X) = CSCI_X * SWRATE

where:

CSCI_X is the number of development staffmonths for Computer Software Configuration Item X

SWRATE is the average loaded monthly labor rate for software developers

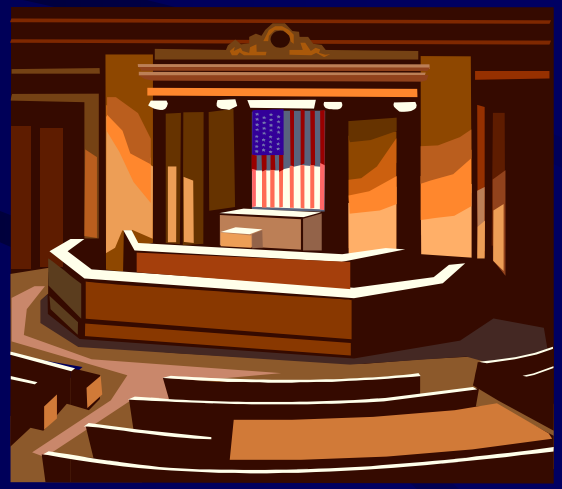
Normalization

- Cost throughputs and the results of various methodologies should be **normalized** to a single Base Year - usually the Base Year of your program.

- Identify the Fiscal Year of your data input in ACE and it will automatically normalize to a specified Base Year.

Time Phasing

- Allocate the resultant Base Year dollar cost of each WBS element to the appropriate Fiscal Years.
- Forms the basis of how much you ask Congress for in each Fiscal Year.



RDT&E - Consistency with Budget Regulations

- 3600 APPN
- incrementally funded
- TOA in any one FY includes only the cost expected to be incurred in that year plus non-cancelable commitments & termination liability
- look at the cumulative cost incurred at key milestones
- note the time frame for Program Test

Procurement - Consistency with Budget Regulations

- Each FY's TOA relates to a certain number of units authorized for Production.
- The cost of the deliverable units includes the PME and associated SE/PM.
- Training, PSE, Data and Initial Spares do not have to be funded the same FY as PME, but should be full-funded lead time ahead.

Fiscal Year Procurement Format (Typical Example)

	FY00	FY01	FY02	Total
PME & SE/PM	$____	$____	$____	$_____
(Quantity)	(40)	(60)		(100)
Training Equipment	$____			$___
PSE		$___	$___	$___
Data	$___	$___	$___	$___
Initial Spares		$___	$___	$___

Time Phasing Methodologies

- Beta Curves (RDT&E)
- Variable % of WBS element's Total Cost by FY
- Fixed % of another WBS element's cost each FY
- Variable Man-months by FY
- Buy quantity by FY
- Percent obligated by key schedule milestones (RDT&E)

Beta Curves

. . . are mathematical expressions of a distribution of costs.

- Specified in a format such as 60/40 or 70/30.
- How do I know the value of the Beta Curve?
- How peaked is the Beta Curve?

Using Beta Curves to Estimate Total Obligation Authority

Example:

- If the CPR data indicates a 60/40 beta curve, the TOA would be a little more than 60%.
- Use expert budget opinion to discern how much to add to the 60%.

Variable Percentage of WBS Element's Total Cost by FY

Determine what percent of the total cost of a WBS element you want in the first year, second year, etc.

Example:

- the estimate for a particular WBS element is $80M
- you budget 20% of the $80M the 1st yr., 30% the 2nd yr., 40% the 3rd yr. & 10% the 4th yr.

Fixed Percentage of Another WBS Element's Cost Each FY

- A WBS element's cost is a certain percentage of another WBS element's cost.
- The percentage remains constant for each Fiscal Year.

Example:

SE/PM is 20% of PME (in every Fiscal Year)

Variable Man-months By FY

Determine the man-months of effort required each FY and multiply by the cost per man-month.

Example:

- Estimate 100 man-months of effort the 1st yr., 200 the 2nd yr., 200 the 3rd yr. & 250 the 4th yr.
- In base year dollars, determine a constant cost per man-month and apply it to the man-month estimates.

Buy Quantity By Fiscal Year

. . . is a function of how many systems are going to be bought each FY.

- » Used for fully funded hardware procurements.

Example:

If ordering 40 systems the 1st yr. and 60 in the 2nd, then the buy quantity in the 1st yr. is 40 and 60 in the 2nd (regardless of when expenses are incurred or delivery date).

Percent Obligated By Key Schedule Milestones

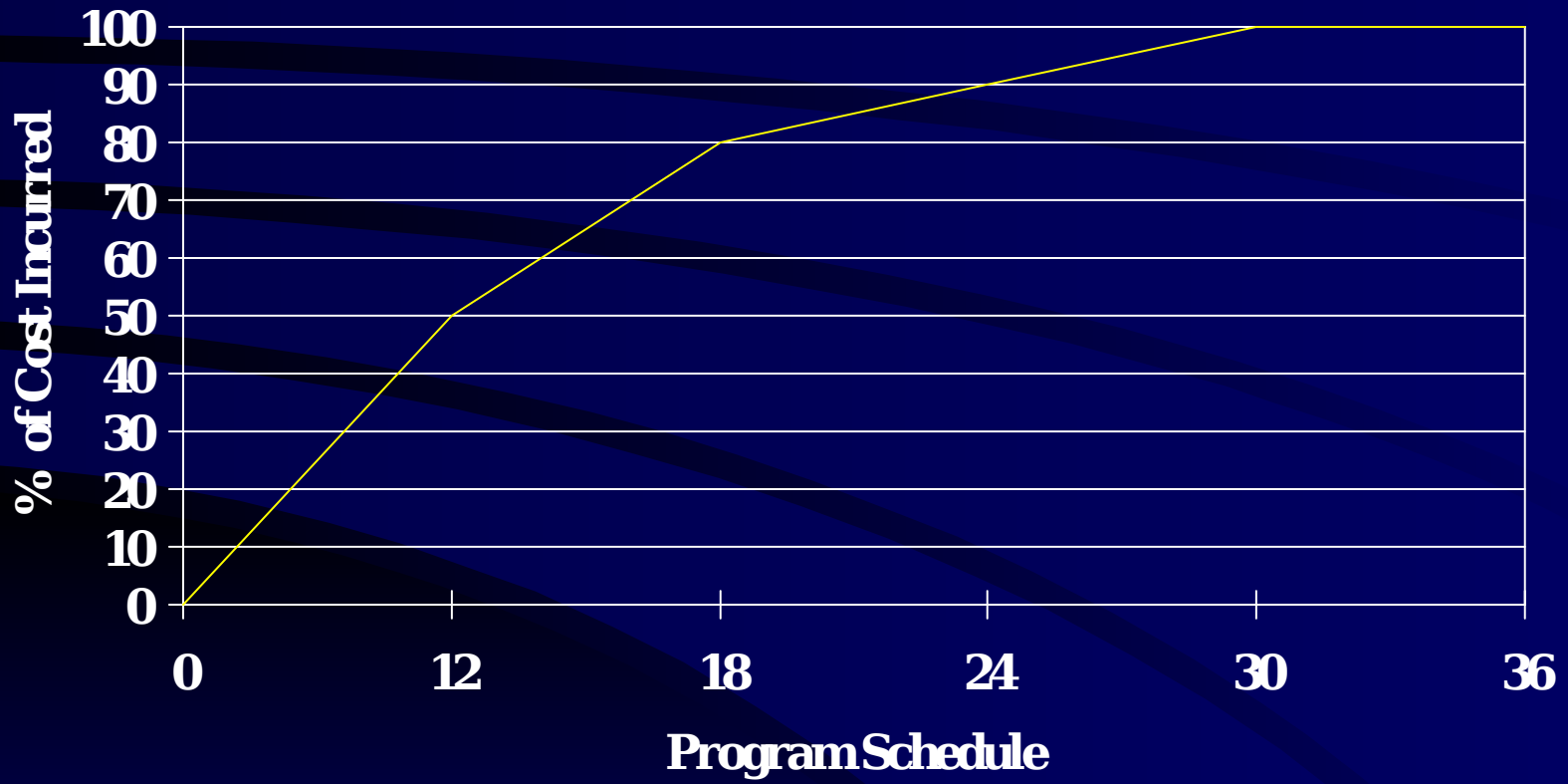
- What is the Program schedule as defined by key schedule milestones?
- What percentage of the costs will be incurred by those key milestones for each WBS element?
- Plot the time phasing information to determine the cumulative percentage of cost incurred at each milestone.

(Pertains to EMD efforts)

Example of Percent Obligated By Key Schedule Milestone

Program Schedule		% of Cost Incurred
0	Contract Award	0
Month 12	PDR	50
Month 18	CDR	80
Month 24	Testing Starts	
Month 30	Testing Completed	100
Month 36	Program Finished	

Cumulative Percents By Key Milestones (For non-recurring hardware design)



Assessing the Time Phasing Methodologies for RDT&E

- Which methodologies should I use?
- Which methodology is the most logical and powerful?
- Is any one of these methodologies best?

Documentation of Time Phasing

- Substantiate your choice of methodology - specify precisely why you selected that approach.
- Indicate your rationale and logic for selecting the numbers or percentages applied to each year.